

THE IHS PRIMARY CARE PROVIDER



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Cryptosporidium parvum

National Center for Infectious Diseases, Centers for Disease Control and Prevention.

Until 1993, when over 400,000 people in Milwaukee became ill with diarrhea after drinking water contaminated with the parasite, few people had heard of *Cryptosporidium parvum*, or the disease it causes, cryptosporidiosis. Today, however, public health and water utility officials are increasingly called on to provide information and make decisions about the control of this protozoan found in public water supplies, recreational water, and other areas.

Since November 1994, the Working Group on Waterborne Cryptosporidiosis (WGWC), a consortium of public health experts from the Centers for Disease Control and Prevention (CDC), the Environmental Protection Agency, the U.S. Department of Agriculture, the Food and Drug Administration, state and local government agencies, and private groups ranging from the AIDS Coalition to Unleash Power to the American Water Works Association, has been meeting bi-monthly by teleconference to address this emerging threat. Working together, they have developed public health messages for the immunocompromised and other groups, drafted guidelines for public health and water utility officials, and prepared informational materials for both laboratory clinicians and health care providers. Over the next several months these materials will be completed and made available to the groups at whom they are targeted.

A Danger for the Immunocompromised

Cryptosporidiosis is most particularly a danger for the immunocompromised, especially HIV-positive persons and persons with AIDS. Individuals with CD4 cell counts below 200 are more likely to experience severe complications, including prolonged diarrhea, dehydration, and possible death. Those with CD4 counts above 200 may recover from cryptosporidiosis yet maintain the infection asymptomatically,

with symptoms potentially returning if their CD4 count later drops.

Other diseases besides AIDS can cause immunosuppression severe enough to lead to chronic cryptosporidiosis; persons with these diseases should also be concerned about becoming infected. These diseases include congenital agammaglobulinemia and congenital IgA deficiency. Persons taking corticosteroids, for cancer treatment and bone marrow or organ transplants, also need to be concerned about becoming infected. Even though persons who are taking immunosuppressive drugs may develop chronic and/or severe cryptosporidiosis, the infection usually resolves when these drugs are decreased or stopped. Persons taking immunosuppressive drugs need to consult with their health care provider if they believe they have cryptosporidiosis.

Transmission and Symptoms

Persons at increased risk for contracting cryptosporidiosis include child care workers, diaper-aged children who attend child care centers, persons exposed to human feces by sexual contact, and caregivers who might come in direct contact with feces while caring for a person infected with cryptosporidiosis.

Transmission is by fecal-oral route, including contact with the stool of infected humans or animals or with objects

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contaminated with stool. Transmission is also common from ingestion of water contaminated with stool, including water in the recreational water park and swimming pool settings.

Symptoms of cryptosporidiosis include, most commonly, watery diarrhea and cramps, sometimes severe. Weight loss, nausea, vomiting, and fever are also possible. The severity of symptoms varies with the degree of underlying immunosuppression, with immunocompetent persons commonly experiencing watery diarrhea for a few days to four or more weeks and occasionally having a recurrence of diarrhea after a brief period of recovery. Patients with AIDS can have nearly constant diarrhea for months or even years.

Treatment and Prevention

There is currently no cure for cryptosporidiosis, though drug research is continuing. Patients who suspect they may have cryptosporidiosis should drink extra fluids, and may wish to drink oral rehydration therapy liquid, to avoid dehydration. HIV-positive individuals who suspect they have cryptosporidiosis should contact their health care provider. Infected individuals should be advised to wash their hands frequently, especially before preparing food and after going to the toilet. They should also avoid close contact with anyone who has a weakened immune system. Individuals with diarrhea should not swim in public bathing areas while they have diarrhea and for at least two weeks after the last

episode of diarrhea.

Washing hands is the most effective means of preventing cryptosporidiosis transmission. For the immunocompromised, sex (including oral sex and especially oral-anal sex) that involves possible contact with stool should be avoided. Immunocompromised individuals should also avoid the stool of all animals and wash their hands thoroughly after any contact with animals or the living areas of animals. Immunocompromised persons may also wish to wash, peel, or cook all vegetables and to take extra measures, such as boiling or filtering their drinking water, to ensure its safety.

CDC now has a "voice-fax" telephone system for cryptosporidiosis. Callers to this "Cryptosporidiosis Information Line" can listen to recorded messages on cryptosporidiosis and order printed materials, designed for different audiences, by fax. The information line number is 404-330-1242. Many of the same materials available from the information line are also available at the National Center for Infectious Diseases Internet Home Page on the World Wide Web, at <http://www.cdc.gov/ncidod/diseases/crypto/crypto.htm>. Additionally, the WGWC plans, in 1996, to issue a guidance notebook on waterborne cryptosporidiosis outbreaks for use by public health and water utility officials. More information on this notebook will be available, when it is released, from state public health offices, the CDC, and public health agencies.

Cost Containment in the Pharmacy

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Editor's note: The following article is an example of the type of studies IHS and tribal clinical staff need to be involved in, that is, research that can have direct impact on the quality and cost-effectiveness of patient care. Regrettably, in this particular study, certain limitations (described by the author) make it difficult to draw any statistically valid conclusions. Regardless, there is much to be learned from an article like this and the author is to be commended for his willingness to explore the issue described in the article and for taking the time to write about and share his experiences with our readers.

The author and the editors hope that readers will learn that (1) clinical research need not be complicated or enormously time consuming and (2) research can be done at local IHS and tribal facilities without the need for additional staff or funding. Available resources are listed for those who might be considering doing research and want some guidance to ensure that the final result is statistically valid and useful.

Chlamydia trachomatis is now the most commonly reported reportable, bacterial sexually transmitted disease (STD) [personal communication with Susan Bradley, Centers for Disease Control, November 1, 1995] in the United States. Recent pharmaceutical developments have made available single-dose, oral antibiotic therapy (azithromycin) for the treatment of this disease. This has been hailed as an advance

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in fostering patient compliance. However, azithromycin is extremely costly compared to the alternative regimen recommended by the Centers for Disease Control and Prevention (CDC),¹ which is doxycycline 100 mg taken orally twice daily for seven days. To determine if it is cost-effective to provide the more expensive medication at our facility, we attempted to evaluate compliance with treatment by examining our cure rates.

The facility where this evaluation took place is a small, rural, Indian Health Service outpatient clinic located approximately 100 miles from the nearest metropolitan area. The evaluation took place between October 1, 1992 and August 31, 1993. All patients with a positive chlamydia culture, as reported by the state laboratory during the period mentioned above, and their sexual contacts, were included in the evaluation. A therapeutic regimen was assigned by the pharmacists as the patient health records were presented to the pharmacy. Every other patient presenting to the pharmacy was given a single oral dose of azithromycin 1 gm; the other patients were given doxycycline 100 mg twice daily for seven days. Pregnant women were treated only with azithromycin (doxycycline has teratogenic effects and, like tetracycline, should be avoided in pregnancy).

To prevent skewing the data related to compliance, patients receiving the single-dose treatment were *not* asked to take the medication in the presence of the pharmacist.

While the CDC¹ states that retesting after completion of treatment with one of the recommended antibiotic regimens for chlamydia is not necessary, we utilized a "test-of-cure" in our evaluation process as the method of attempting to determine compliance with treatment. Public Health Nurses assisted by making home visits to encourage patients to return for the test-of-cure.

During the 11 month evaluation period, 34 persons were identified by the state laboratory as having a positive culture for chlamydia. A total of 72 individuals were treated: 34 patients and 38 contacts. Of the 72 treated, 29 were male. The treatment groups are depicted in Table 1.

Test-of-cure was performed on 12 individuals, with a result of 10 negative cultures (laboratory reports could not be found for 2 of the tests). Table 2 shows the treatment regimens for those 12 individuals.

Discussion

Compliance. Many factors can influence compliance, including regimen complexity and dosing frequency.^{2,3} The compliance rate during this evaluation period is interesting. One might assume there would be better compliance with a single-dose treatment than with a treatment given twice daily over a seven day period, yet test-of-cure results were negative for individuals prescribed either medication. Perhaps individuals are more motivated to take their medication, regardless of the regimen, when they know they have a sexually transmitted disease. Another possible factor in compliance may be that the doxycycline was given twice a day; compliance with twice a day dosing has been demonstrated to be

Table 1. Treatment regimens given to patients and contacts.

	Doxycycline	Azithromycin
Patients	12	22
Contacts	21	17

Table 2. Drugs used by individuals who returned for test-of-cure.

Doxycycline	5
Azithromycin	7

substantially greater than compliance with dosing three or four times a day.²

Limitations of the study. Assigning patients to the treatment regimens as they presented to the pharmacy, rather than by using a random sample, may lead to selection bias. In addition, the numbers of patients and contacts returning for test-of-cure were too small to obtain statistically significant data or to draw any reliable conclusions. From the limited data we did obtain, it would appear that patients were compliant with both drug regimens, since all ten known test-of-cure results were negative. On the other hand, a question could be raised as to whether the 10 test-of-cures might have been obtained from the 10 most compliant patients, a confounding variable that would certainly need to be considered when analyzing the results.

Recommendations. Several issues would need to be addressed, if an evaluation similar to that described in this article were to be meaningful. Three of these issues will be considered here.

Test-of-cure was utilized as the primary method of determining compliance with treatment and, in itself, is an acceptable measurement tool. However, few individuals returned for the test-of-cure. Expecting patients and their contacts to come to the clinic for follow-up examinations and tests requires that the study designers plan ways to increase the likelihood that they will cooperate. This may include some or all of the following, which were not done in the study presented in this article: having the primary care provider, at the time the treatment is prescribed, tell the patient to return to clinic for the test-of-cure; giving the patient an appointment before leaving the clinic; and updating the patient's mailing address (at the time of the visit) and mailing a reminder letter.

Study planners might want to consider a separate arm of the study to deal just with contacts or, on the other hand, *not* include them in the study at all. There may be a number of

variables related to contacts that might interfere with their coming in for a test-of-cure. Contacts might not believe that they ever were infected (because they may have had no symptoms and were not tested, in the first place). Contacts also may feel they are able to remain "anonymous" by avoiding the clinic. In addition, while it is assumed that all contacts will be infected, this may or may not be the case; negative test-of-cures would be meaningless if individuals were never infected in the first place.

The third issue involves treatment group assignment. Random assignment is usually recommended to avoid possible bias. Common randomization techniques include tosses of dice or coins, or assignment using a table of random numbers (found in textbooks on statistics).⁴ "'Haphazard' is not random, nor is alternating assignment, or assignment by birth date or hospital admission number."⁴

Conclusion

As the IHS service population continues to increase and the budget shrinks, the importance of performing cost-benefit analyses, at *all* levels of the organization, to better manage our limited resources, will become more apparent and more

urgent. IHS and tribal staff need to be open to new ideas about health care delivery. We need to recognize that we are capable, even with the limited resources available to us, of evaluating current and new methods of providing services in order to conserve resources while maintaining high standards of quality.

The IHS Research Program and the IHS Area Research and Publications Review Committees/Institutional Review Boards (IRB) have useful information they can share with anyone wanting to conduct a study. Please see the box below for a list of contact persons.

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The following is an updated MEDLINE search on Native American medical literature. At the end of each cited article, you will find a unique identifying (UI) number. For those of you who may wish to obtain a copy of a specific article, this can be facilitated by giving the librarian nearest you the UI number as well as the complete citation.

If your facility lacks a library or librarian try calling your nearest university library, the nearest state medical association, or the National Library of Medicine (1-800-272-4787) to obtain information on how to access journal literature within your region. Bear in mind that most local library networks function on the basis of reciprocity and, if you do not have a library at your facility, you may be charged for services provided.

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The IHS Clinical Support Center has continuing education materials available, at no charge, for health care professionals employed by Indian health programs. To make it easier for you to request these materials, we will describe what is available and provide an order form several times a year in *The Provider*.

Individual Format

“Home Study Modules” are designed for use by physicians, nurses, nurse practitioners, physician assistants, and pharmacists. To obtain continuing education credits, an individual must read the materials in the module, take and pass the post-test, and complete the evaluation form. It is expected that each of these learning activities will take participants approximately 2-5 hours to complete. Current topics are listed on the order form below.

Group Format

Eleven risk management modules and a nurse leadership development course (described in more detail below) are designed to be used in a group format. These group format activities, requiring someone on the staff to identify him/herself as the coordinator and discussion leader, include background material for the coordinator, goals and objectives, and ideas to promote active participation of the group. To obtain continuing education credits, the coordinator/discussion leader, after following the format provided, must submit the attendance list and all completed evaluations to the Clinical Support Center.

Each of the Risk Management modules includes four unique case histories involving tort claims against the Indian Health Service, as well as background information for the designated discussion leader, and suggested questions to encourage active dialogue about the issues presented. Each

module stands on its own; use of all modules is not required to obtain credit. IHS- and tribal-employed physicians, physician assistants, nurse practitioners, and nurses can earn continuing education (CE) credit using these modules.

The Nurse Leadership Development course is designed to be offered over several months’ time. Each of the 16 modules in this continuing education activity includes a lesson plan, objectives, background information for the discussion leader, a suggested bibliography that participants may read to enable them to be actively involved in the learning process, evaluation forms, and more. The purpose of this course is to enhance the leadership and management skills of registered nurses. To ensure the success of this activity, it is important to have the Director of Nurses’ and nursing supervisors’ commitment. In addition, the nursing staff needs to be involved in the needs assessment and initial planning so that they feel this is something they want to be actively involved with. CE credit for this activity is available for nurses only.

CE Accreditation

These activities have been planned and produced in accordance with the criteria established by the Accreditation Council for Continuing Medical Education (ACCME), the American Nurses Credentialing Center Commission on Accreditation (ANCCCA), and the American Council on Pharmaceutical Education (ACPE). The Indian Health Service Clinical Support Center is the accredited sponsor.

How to Obtain Materials

Health care professionals employed by Indian health programs may request these continuing education materials by completing the coupon below and sending it to the IHS Clinical Support Center, 1616 East Indian School Road, Suite 375, Phoenix, Arizona 85016 (Fax: 602-640-2138).

Request for Continuing Education Materials

When ordering materials, please check no more than three items per order.

Individual Format (home study modules)

☐ Tuberculosis ☐ Sexually Transmitted Diseases ☐ Hypertension ☐ Headaches ☐ Asthma ☐ Early HIV Infection ☐ Urinary Incontinence

Group Discussion Format (risk management modules)

<input type="checkbox"/> Negligence	<input type="checkbox"/> Documentation: The Defensible Medical Records	<input type="checkbox"/> Federal Government Liability for Contract Providers
<input type="checkbox"/> Informed Consent	<input type="checkbox"/> Reducing the Incidence of Medication Errors	<input type="checkbox"/> Issues Involving Contract Health Services
<input type="checkbox"/> Golden Rules of Risk Management	<input type="checkbox"/> Medical Malpractice	<input type="checkbox"/> Informed Consent Revisited
<input type="checkbox"/> Tort Claims	<input type="checkbox"/> Credentials and Clinical Privileging	

Group Discussion Format (other)

☐ Nurse Leadership Development

Please *PRINT* legibly.

Name _____ Profession _____

Address _____ Phone _____

☐ IHS employee ☐ Tribal ☐ Other _____ *Please specify*

Service Unit _____ *Please specify*

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Major Subjects, Volume 20, January-December, 1995

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• State-of-the-Art Education about HIV Disease	Aug	95
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ANMC Tobacco Cessation Program: Quit Rates at One-Year Follow-Up	Jul	95
Anticoagulation Service Initiated by Pharmacists, Crow Agency	Aug	95

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Beliefs of Native American Patients About Diabetes	Jun	95
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• A Pueblo Cancer Support Group and Education Program	Feb	95
• Community Programs for Cancer Control: The Three Tribes Program	May	95
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• Circle of Health (Commentary)	Nov	95
• Harmony (Commentary)	Nov	95

• In Support of Animal Control Services (Commentary)	Nov	95
• World is Our Family, The (Commentary)	Nov	95
Community Health		
• ANMC Tobacco Cessation Program: Quit Rates at One-Year Follow-Up	Jul	95
• Community Programs for Cancer Control: The Three Tribes Program	May	95
• <i>Cryptosporidium parvum</i>	Dec	95
• Injury Prevention and the Trauma Care Provider: "Pretrauma Life Support"	Jul	95
• Spaying and Neutering: Tools For Moving From Crisis Management to Prevention	Nov	95
• Teenage Pregnancy: The Effects of Public Health Nurse Intervention	Feb	95
• Strategies to Reduce Problem Conceptions and STDs Among Young Adults	Apr	95
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• Compacting and CSC Services	Feb	95
• Indian Self-Determination: Defining Contracting and Compacting	Oct	95
• Indian Self-Governance: Going Through the Compacting Process	Oct	95
Competency (Staff): An Obligation to Recipients of Care	Feb	95
Contraception		
• Norplant: A Long Acting Steroid Contraceptive - Not Quite All That It's Made Out to Be	Jun	95
• Norplant Experience at Mt. Edgecumbe Hospital (SEARHC)	May	95
• Strategies to Reduce Problem Conceptions and STDs Among Young Adults	Apr	95
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Crow Agency Anticoagulation Service Initiated by Pharmacists	Aug	95
<i>Cryptosporidium parvum</i>	Dec	95
CSC Services and Compacting	Feb	95

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Diabetes

• Beliefs of Native American Patients About Diabetes	Jun	95
• Diabetes and Impaired Glucose Tolerance in Three American Indian Populations Aged 45-74 Years: The Strong Heart Study	Aug	95
• Metformin: New Anti-diabetic Drug for Patients with Type II Diabetes	May	95
Dimensions of the Human-Animal Bond	Nov	95

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Epidemiology of Alcohol Abuse Among American Indians: The Mythical and Real Properties	Mar	95
Erratum: Beliefs of Native American Patients About Diabetes (June 1995)	Aug	95

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Health Promotion, Meeting the Oral Health Objectives for American Indians and Alaska Natives	Jan	95
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Indian Self-Determination: Defining Contracting and Compacting	Oct	95
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Injury Prevention and the Trauma Care Provider: "Pretrauma Life Support"	Jul	95
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Call for Papers

Eighth Annual IHS Research Conference

The Eighth Annual IHS Research Conference will be held the week of April 29, 1996 in Albuquerque, New Mexico. More information will be provided in the next issue of *The IHS Provider* about: (1) the call for abstracts, and (2)

the call for proposals from the National, Area, and Tribal Health Boards/Committees for their participation. The Conference will feature "lessons learned from research over the years."

Nurse Anesthesia Program

The State University of New York at Buffalo (SUNY Buffalo), School of Nursing offers an Indian Health Service (IHS) scholarship within the Nurse Anesthesia Program. The Native American Nurse Anesthesia Recruitment Program is dedicated to the education of Native American Registered Nurses or IHS Registered Nurses in the advanced nursing specialty of nurse anesthesia.

The School of Nursing at SUNY Buffalo offers BSN, MS, and DNS programs. It also offers an RN-BSN and RN-MS program which provides diploma and associate degree nurses with the opportunity to meet these degree requirements on an accelerated basis. Both the undergraduate and masters degrees programs are accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs, a specialized accrediting body.

Eligibility for the graduate School of Nursing Program at SUNY Buffalo includes one year of critical care experience, a bachelors of science in nursing (minimum Grade Point Average of 3.0), and the Graduate Record Exam (GRE). The

Nurse Anesthesia Program lasts 27 months and includes an 18-month Clinical Residency. Students are prepared to administer anesthesia in all surgical settings across the patient's lifespan. The IHS scholarship includes tuition, fees, and stipends.

Buffalo lies within the region of the Iroquois Confederacy of Six Nations, the largest independent non-Western political body in North America. Within the Northern Tier of Western New York are located the Tuscarora and the Tonawanda Indian Reservations; the Cattaraugus and Allegany Reservations are located in the Southern Tier of Western New York and the Oneida and Onondaga Reservations are in Central New York.

For further information, call or write Nadine A. Fallacaro, MS, CRNA, Project Director, Native American Nurse Anesthesia Recruitment Program, State University of New York at Buffalo, 1115 Kimball Tower, 3436 Main Street, Buffalo, NY 14214-3079 (phone: 716- 829-2410).

Obstetrics/Gynecology/Pediatrics January 26-28, 1996 Telluride, CO

This annual IHS Navajo Area Obstetrics/Gynecology/Pediatrics conference is open to all IHS and tribal obstetricians, gynecologists, pediatricians, and interested primary care physicians. It will be held at the Christ Presbyterian Church in Telluride, Colorado. For more information, contact Dr. Alan Waxman, Gallup Indian Medical Center, P.O. Box 1337, Gallup, New Mexico 87305 (phone: 505-722-1000; fax: 505-722-1554).

Colposcopy March 12-15, 1996 Santa Fe, NM

This three and one-half day continuing education conference for IHS and tribal primary care providers (including lectures, small group discussions, and hands-on experience with patient models and live patient exams) is sponsored by the Indian Health Service and the Centers for Disease Control and Prevention. To complete the training program, students

are expected to follow the course with a preceptorship that includes at least 50 supervised colposcopy exams. There will be no cost to the service units to attend the course, however, it is expected that service units will provide equipment and scheduled time to complete the required preceptorship.

Enrollment is limited to 20 participants. Selection for participation will be based on the following: (1) First choice will be limited to IHS and tribal primary care providers with a commitment to women's health care and the intent to remain at the service unit for at least two years after the training is completed. Interested physicians, nurse practitioners, nurse midwives, or physician assistants are encouraged to apply. (2) A prior arrangement with your referral colposcopist to act as preceptor is required. Assistance with the preceptorship can be arranged through the IHS Cancer Prevention and Control Program. (3) The service unit should have a large enough volume of abnormal Pap smears (at least low grade squamous intraepithelial lesions) to allow at least 50 colposcopies per year to maintain the participants' skills

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after training is complete. (4) The service unit should have or be committed to purchasing a colposcope, cryosurgery unit, and several sets of biopsy instruments for cervical biopsy and endocervical curettage.

For an application, send (no later than January 20, 1996) your name, professional discipline, mailing address, service unit/facility name, and daytime phone number to Roberta Paisano, MPH, IHS Cancer Prevention and Control Program, 5300 Homestead Road, N. E., Albuquerque, NM 87110 (phone: 505-837-4132; fax: 505-837-4393).

Diabetes Translation Conference March 31-April 3, 1996 Washington, DC

The National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) of the Centers for Disease Control and Prevention (CDC) is sponsoring this conference

THE IHS PRIMARY CARE PROVIDER

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Opinions expressed in articles are those of the authors and do not necessarily reflect those of the Indian Health Service or the Editors.

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with the theme "Health Care in Transition: Diabetes as a Model for Public Health." The meeting will be held at the Stouffer Mayflower Hotel in Washington, DC. For more information, contact Cheryl Shaw, NCCDPHP, CDC, 4770 Buford Highway, Atlanta, GA 30341 (phone: 770-488-5004).

Southwest Regional Pharmacy Seminar May 31-June 2, 1996 Scottsdale, AZ

This annual continuing education seminar is held for IHS- and tribal-employed pharmacists working in the IHS Phoenix, Navajo, Albuquerque, Tucson, California, and Portland Areas. Fifteen hours of ACPE credit will be available to attendees. More information and the agenda will be available in early 1996. For more information, contact Stephan Foster, PharmD, IHS Clinical Support Center, 1616 E. Indian School Road, Suite 375, Phoenix, AZ 85016 (phone: 602-640-2140).

Circulation: *The Provider* (ISSN 1063-4398) is distributed to more than 6000 health care providers working for IHS and tribal health programs, to medical and nursing schools throughout the country, and to health professionals working with or interested in American Indian and Alaska Native health care. If you would like to receive *The Provider*, free of charge, send your name, address, professional title, and place of employment to the address listed below.

Publication of articles: Manuscripts, comments, and letters to the editor are welcome. Items submitted for publication should be no longer than 3000 words in length, typed, double-spaced, and conform to manuscript standards. IBM-compatible word processor files are preferred.

Authors should submit at least one hard copy with each electronic copy. Manuscripts may be received via the IHS Banyan electronic mail system. References should be included. All manuscripts are subject to editorial and peer review. Responsibility for obtaining permission from appropriate Tribal authorities/Area Publications Committees to publish manuscripts rests with the author. For those who would like some guidance with manuscripts, a packet entitled "Information for Authors" is available by contacting the CSC at the address below.

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